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WE CLAIM:

1. A method of processing a digital signal at an output of a filter matched to a spreading code in a spread spectrum radio communication receiver,
5 the digital signal comprising successive blocks each corresponding to a sequence of symbols sent by a transmitter, each sequence comprising at least one symbol known a priori and information symbols, the method comprising the steps of:
 - 10 - estimating statistical parameters representing a channel having at least one propagation path between the transmitter and the receiver; and
 - processing each block of the digital signal to estimate instantaneous amplitudes of reception
15 of the symbols of the corresponding sequence sent by the transmitter,wherein the processing of a block comprises the steps of:
 - 20 - estimating a group of at least one information symbol of the sequence by optimizing a criterion defined by the digital signal of said block, the estimated statistical parameters, at least one symbol of the sequence which is known a priori and each information symbol of said
25 group; then,
 - estimating said instantaneous amplitudes as a function of the digital signal of said block, of the estimated statistical parameters, of the symbols of the sequence which are known a
30 priori and of the estimated symbols of said group.

2. A method according to Claim 1, wherein the symbols of said group carry radio link control information.
3. A method according to Claim 1, wherein the
5 estimation of the group of information symbols comprises an exhaustive calculation of said criterion for the various possible values of the symbols of the group.
4. A method according to Claim 3, wherein said group
10 comprises redundant information symbols.
5. A method according to Claim 1, wherein the statistical parameters representing the channel are estimated on the basis of block portions corresponding to the symbols known a priori.
- 15 6. A method according to Claim 5, wherein the statistical parameters representing the channel comprise eigenvalues and eigenvectors of an autocorrelation matrix of the instantaneous amplitudes.
- 20 7. A method according to Claim 6, wherein a table of eigenelements is stored for a collection of values of speed of movement of a mobile station comprising one of said transmitter and receiver, wherein said table has, for each speed value, at
25 least one entry containing a set of eigenvalues and eigenvectors of said autocorrelation matrix, which are precalculated according to a propagation model, and wherein the estimation of the statistical parameters comprises the selection of
30 an entry of the table of eigenelements.

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8. Method according to Claim 7, wherein each entry of the table of eigenelements for a speed value further contains an instantaneous amplitudes autocorrelation vector, precalculated according to the same propagation model, wherein the autocorrelation vector of the instantaneous amplitudes is estimated on the basis of block portions corresponding to the symbols known a priori, and wherein the entry of the table of eigenelements is selected as containing the precalculated autocorrelation vector closest to the estimated autocorrelation vector.
9. Method of estimating a speed of movement of a mobile radio communication station based on a digital signal produced by a filter matched to a spreading code in a spread spectrum radio communication receiver, the digital signal comprising successive blocks each corresponding to a sequence of symbols sent by a transmitter, each sequence comprising at least one symbol known a priori, said mobile station comprising one of said transmitter and receiver, the method comprising the steps of:
- storing a table of vectors for a collection of values of speed of movement of the mobile station, the table having, for each speed value, at least one entry containing an autocorrelation vector of instantaneous amplitudes of reception of symbols sent by the transmitter, precalculated according to a propagation model;
 - estimating the autocorrelation vector of the

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instantaneous amplitudes on the basis of block portions corresponding to the symbols known a priori;

- 5 - selecting an entry of the table of vectors, containing the precalculated autocorrelation vector closest to the estimated autocorrelation vector; and
- estimating the speed of movement of the mobile station on the basis of the selected entry.

10 10. A method according to Claim 9, wherein the table of vectors has entries containing respective autocorrelation vectors precalculated according to a plurality of propagation models.

15 11. A device for processing a digital signal at an output of a filter matched to a spreading code in a spread spectrum radio communication receiver, the digital signal comprising successive blocks each corresponding to a sequence of symbols sent by a transmitter, each sequence comprising at least one symbol known a priori and information symbols, the device comprising:

- 20 - means for estimating statistical parameters representing a channel having at least one propagation path between the transmitter and the receiver; and
- 25 - means for processing each block of digital signal so as to estimate instantaneous amplitudes of reception of the symbols of the corresponding sequence sent by the transmitter,

30 wherein the processing means comprise:

- means for estimating a group of at least one

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- information symbol of the sequence by optimizing a criterion defined by the digital signal of said block, the estimated statistical parameters, at least one symbol of the sequence which is known a priori and each information symbol of said group; and
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- means for estimating said instantaneous amplitudes as a function of the digital signal of said block, of the estimated statistical parameters, of the symbols of the sequence which are known a priori and of the estimated symbols of said group.
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12. A device according to Claim 11, wherein the symbols of said group carry radio link control information.
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13. A device according to Claim 11, wherein the means of estimation of the group of information symbols comprise means of exhaustive calculation of said criterion for the various possible values of the symbols of the group.
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14. A device according to Claim 13, wherein said group comprises redundant information symbols.
15. A device according to Claim 11, wherein the means of estimation of the statistical parameters are arranged to operate on the basis of block portions corresponding to the symbols known a priori.
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16. A device according to Claim 15, wherein the statistical parameters representing the channel comprise eigenvalues and eigenvectors of an autocorrelation matrix of the instantaneous
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amplitudes.

17. A device according to Claim 16, wherein the means of estimation of the statistical parameters comprise a memory for storing a table of eigenlements for a collection of values of speed of movement of a mobile station comprising one of said transmitter and receiver, the table having, for each speed value, at least one entry containing a set of eigenvalues and eigenvectors of said autocorrelation matrix, which are precalculated according to a propagation model, and means of selection of an entry of the table of eigenlements.
18. A device according to Claim 17, wherein each entry of the table of eigenlements for a speed value further contains an instantaneous amplitudes autocorrelation vector, precalculated according to the same propagation model, wherein the means of estimation of the statistical parameters comprise means for estimating the autocorrelation vector of the instantaneous amplitudes on the basis of the block portions corresponding to the symbols known a priori, and wherein the means of selection are arranged to select the entry of the table of eigenlements containing the precalculated autocorrelation vector closest to the estimated autocorrelation vector.
19. A device for estimating a speed of movement of a mobile radio communication station based on a digital signal produced by a filter matched to a spreading code in a spread spectrum radio communication receiver, the digital signal

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comprising successive blocks each corresponding to a sequence of symbols sent by a transmitter, each sequence comprising at least one symbol known a priori, said mobile station comprising one of said transmitter and receiver, the device comprising:

- a memory for storing a table of vectors for a collection of values of speed of movement of the mobile station, the table having, for each speed value, at least one entry containing an autocorrelation vector of instantaneous amplitudes of reception of symbols sent by the transmitter, precalculated according to a propagation model;
- means for estimating the autocorrelation vector of the instantaneous amplitudes on the basis of block portions corresponding to the symbols known a priori;
- means for selecting an entry of the table of vectors, containing the precalculated autocorrelation vector closest to the estimated autocorrelation vector; and
- means for estimating the speed of movement of the mobile station on the basis of the selected entry.

20. A device according to Claim 19, wherein the table of vectors has entries containing respective autocorrelation vectors precalculated according to several propagation models.